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IRRIGATION OF FEED CROPS WITH ANIMAL HUSBANDRY OUTFLOW (OROSHEN--ETC(U)
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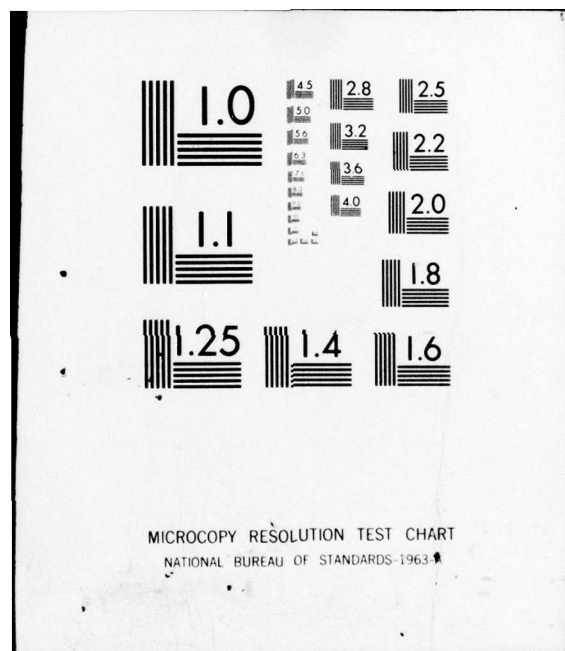


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V.I. Dmitrieva et al.

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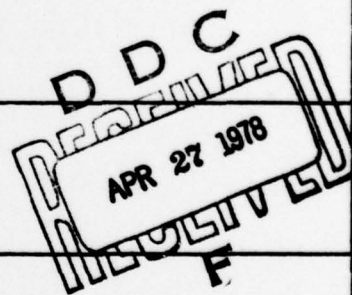


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IRRIGATION OF FEED CROPS WITH ANIMAL HUSBANDRY OUTFLOW

Kupavna OROSHENIYE KORMOVYKH UGODIY ZHIVOTNOVODCHESKIMI STOKAMI 1976
in Russian pp 1-3

[Prospectus by Candidate of Agricultural Sciences V. I. Dmitrieva,
Engineer V. A. Nikitin, and Engineer V. A. Polenina (VNIISV)]

The conversion of livestock production to an industrial base predetermines the considerable increase in water consumption and the accumulation of substantial volumes of outflow by animal husbandry complexes.

Throughout the world animal husbandry requirements call for the annual use of about 40 cubic km of water. Animal husbandry enterprises release approximately 10 cubic km of waste water per year.

The use of the outflow of animal husbandry complexes for the irrigation of feed crops could constitute an additional source of fertilizer, for it contains considerable quantities of basic nutritive elements. The experience of a number of farms in Belgorodskaya, Moscow, Kalininskaya and other oblasts has proved that up to 10,000 fodder units per hectare may be raised by irrigating perennial grasses with animal husbandry outflow.

The use of animal husbandry complex outflow for irrigation contributes not only to strengthening the fodder base but to preventing the pollution of the surface and ground waters and of the surrounding area.

The use of animal husbandry outflow in crop growing could be achieved through the following basic methods:

- 1) Transportation with mobile facilities and distribution on the area with special tanks;
- 2) Transportation through pipes and distribution with the help of sprinkling and watering systems;
- 3) Pipeline transportation to the field storing area and distribution with tankers;
- 4) Compost manufacturing.

For big animal husbandry complexes it would be more expedient to use liquefied pipeline transportation with subsequent distribution of the outflow with sprinkling and irrigation systems. In all cases of utilization of animal husbandry farm outflow for irrigation, the water must be properly treated: outside coarse objects (chips, bits of wood, wire and others) must be removed; large sized admixtures must be crushed; the solid and liquid fractions should be separated and decontaminated from pathogenic microorganisms and helminth eggs. The separated solid fraction must be stored in clamps and decontaminated as a result of the biothermal processes which occur within the clamps, and then applied as fertilizer with conventional manure spreaders. The liquid fraction could be used for the irrigation of crops -- in the course of autumn plowing as a fertilizer addition to the soil for next year's crop, and in the vegetation period in the irrigation of perennial grasses following the preliminary dilution of the water. The studies conducted by the VNIISV in Belgorodskaya and Moscow Oblasts, and kolkhoz and sovkhoz practical experience have indicated the great effectiveness of irrigating with clarified waste water from animal husbandry complexes of feed crops such as corn, sugar beets, lucerne, and perennial grasses. At the Kolkhoz imeni XXV S"yezda KPSS in Belgorodskaya Oblast, the yield of green corn mass irrigated with the waste water of the cattle farm averaged 310 quintals per hectare, compared with 190 quintals without irrigation. At the Rossiya Kolkhoz in Shchebekinskiy Rayon, Belgorodskaya Oblast, the yield of green perennial grasses irrigated with clarified waste water of the hog breeding farm averaged 400 quintals per hectare, compared with 123 quintals without irrigation.

A proper irrigation regimen must be observed with a view to upgrading the effectiveness of the utilization of the nutritive substances contained in the outflow. The norms and periods for the application of animal husbandry waste water are determined by the biological characteristics of the irrigated crops: their fertilizer and moisture requirements. Sprinkling is the basic irrigation method (with DDN-70 and Volzhanka sprinklers), together with surface gravity methods with the possible automation of all transportation and distribution processes. Most responsive to irrigation with animal husbandry waste water are perennial grasses which are the foundations of the feed base. The production of vitamin-enriched grass meal results in the high effectiveness of the utilization of the green mass of perennial grasses grown on fields irrigated with waste water. The processes related to the cultivation and processing of grasses with a machine unit of the AVM-0.4 type are entirely mechanized and the product meets sanitary requirements as a result of its heat processing at a temperature of no less than 150°C at the outlet.

The use of animal husbandry waste water for irrigation will enable us to grow additionally up to 6,000 fodder units per hectare.

Highly effective purification is achieved on fields irrigated with animal husbandry outflow. Filtering animal husbandry waste water through a meter-thick soddy-podzolic soil, in accordance with the 75 mm irrigation norm,

bichromatic oxidability declined 99.2%; general nitrogen was absorbed 99.1%; ammoniacal nitrogen, 99.5%; potassium, 99.8%; and phosphorus 99%.

Therefore, the irrigation of farm crops with animal husbandry outflow is one of the efficient methods for its utilization, enabling the farms to provide their own feeds for the animals while, at the same time, protecting surface and ground waters from pollution with animal husbandry waste water.